Proposal: Chatbot at USC Libraries

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Executive Summary

Problem Statement

The University of Southern California (USC) Libraries "support[s] the discovery, creation, organization, dissemination, and preservation of knowledge" (USC Libraries, 2017, p.1) within the USC community and beyond. In keeping with this mission, USC Libraries provided 60,000 reference interactions in the fiscal year 2018-2019 (USC Libraries, n.d.a.). However, there is an opportunity to do more. During a given week, USC Librarians are only available to provide services to patrons less than 25 percent of the time (USC Libraries, n.d.b.), greatly inhibiting the ability of scholars who work outside those hours—e.g. those who work at night or international scholars—to use USC Libraries to the maximum potential. Furthermore, USC librarians, already stretched thin, spend an inordinate amount of time and energy on routine reference requests that are well below their expertise.

Recommendation

We recommend USC Libraries invest in a chatbot. This chatbot will be available to patrons outside library working hours, and it will also assist with online reference services during regular library working hours, freeing librarians to work on other tasks. Chatbot technology is rapidly maturing and will be mainstream within two years (Elliott, Mullen, et al., 2021).

Project Goals

By implementing Chatbot at USC Libraries, the Libraries will not only enhance the student learning experience but also provide professional development opportunities to library faculty and staff. Chatbot services will aid in demonstrating a commitment to information literacy while expanding access to information resources to the larger campus community.

Scope

To align with the mission and vision of USC Libraries, the technology plan will work to identify the stakeholders and campus community members, and how the implementation of the new service will enhance their learning experience. Through focus groups and interviews with the campus community. To maintain its knowledge base, software, and effectiveness, library staff and faculty will work to continuously assess the chatbot before, during, and after its implementation.

Benefits

Implementing a chatbot for USC would have immense benefits to the community. This project also meets every pillar of IDEA (inclusion, diversity, equity, and access). Chatbots have been proven to help retain students. What greater benefit for USC than making sure more students stay in the community?

Risks

With every project, there is a level of risk. Fortunately, this project has minimal risks. The largest risk is lack of use. The other risks are having staff feel insecure about their job positions and needing to make extensive revisions to the Chatbot.

Budget

Including the chatbot software, staffing, and materials, the initial startup costs and five-year operating costs for this project will be just over $300,000.

Staffing Plan

We will have five employees working on this project: Lead Librarian, Assistant Librarian, IT Lead, Business Analyst, and a Programmer. Their total combined hours come out to 640.5.

Milestones

To track the progress of the Chatbot at USC Libraries project, milestones will ensure a successful implementation. Additionally, the milestones will provide the organization with opportunities to follow along and assess its progress.

Proposal

Problem Statement

The mission of the University of Southern California (USC) Libraries is to serve USC

and its community by undertaking the following:

> [We] support the discovery, creation, organization, dissemination, and preservation of
>
> knowledge. We develop and deliver collections, services, and programs that support and
>
> encourage the academic, research, clinical, and creative endeavors of our community;
>
> cultivate an inclusive community of intellectually curious, critical thinkers; and help
>
> develop engaged, informed global citizens. (USC Libraries, 2017, p.1)

In carrying out this mission, USC Libraries has a vision to "be an integral, inventive, and

inspiring partner in the scholarly and artistic enterprises of USC faculty, students, and staff," and,

by extension, the "global human community" (USC Libraries, 2017, p.1).

USC Libraries serve 46,000 students and 26,000 faculty and staff (University of Southern

California, n.d.), as well as researchers from outside the USC community. In the 2018-2019

fiscal year, the 23 libraries and information centers had 121 professional staff, 113 support staff,

and 40 student assistants who welcomed over 1.6 million visitors, provided 60,000 reference

interactions, and processed 110,000 circulation and renewal transactions (USC Libraries, n.d.a.).

These numbers suggest that USC Libraries is being a faithful steward and provider of knowledge

for the USC community.

However, there is an opportunity to do more. Currently, USC librarians provide reference

services in person Monday-Friday, 12:00 p.m. - 4:00 p.m.; by e-mail seven days a week; and by

online chat Monday-Thursday, 11:00 a.m. - 5:00 p.m., and Friday, 11:00 a.m. - 4:00 p.m. (USC

Libraries, n.d.b.). Though emails are checked seven days a week, a patron working remotely after hours, maybe even internationally, cannot expect to receive immediate assistance. In a 168-hour week, a USC librarian is available less than 25 percent of the time.

Furthermore, given the number of reference interactions USC librarians do in that limited amount of time, library personnel are already stretched thin, and USC Libraries should seek any way to direct personnel resources in the most useful, most efficient ways. Routine reference interactions that do not need the expertise of professional librarians should be directed elsewhere.

Two aspects of USC Libraries' vision are to promote "a culture of commitment to our community and our colleagues and to developing diverse collections, services, spaces, and programs that embody that dedication" and "an appreciation of scholarship, in all its forms, and of the libraries' essential role in informing the scholarship of the future" (USC Libraries, 2017, p.1). To truly demonstrate their commitment to the USC and global communities and the scholarship of the future, USC Libraries must make their reference services available to patrons worldwide, at all hours of the day, while simultaneously focusing librarians' time and energy in the most effective ways. Perhaps the best solution would be for USC Libraries to hire enough librarians and staff that someone would be able to cover the online chat function 24 hours a day, seven days a week. However, USC Libraries do not have the financial resources for such an endeavor, so we propose a different solution.

Recommendation

We recommend USC Libraries invest in a chatbot to address questions and reference requests from remote patrons all day, every day. Not only would the chatbot be available to patrons outside library working hours, opening USC Libraries to scholars all over the world, but

the chatbot would also be able to assist with online reference services during regular library working hours. Chatbots can address routine reference requests, freeing live librarians to focus on more complicated requests or other tasks; they can gather preliminary information if the chatbot needs to send the patron to a live librarian; and they can help weed out the simpler requests, requests that are beyond the scope of the library, and pranksters. Furthermore, there is the potential for chatbots to engage with more complex requests, if USC is willing to expend the time and money for the development (Elliot, Baker et al., 2021).

Gartner's Hype Cycle for Natural Language Technologies, 2021, predicts chatbots will reach mainstream adoption in less than two years: they are in very high demand, and the technology is finally starting to reach its potential (Elliott, Mullen, et al., 2021). Despite being placed at the very bottom of the Trough of Disillusionment—where much-hyped new technologies reside when stories of failure have outnumbered stories of success (Gartner, n.d.)— Gartner is optimistic that chatbots, having nowhere to go but up, will be one of the technologies that successfully climb the Slope of Enlightenment into the Plateau of Productivity (Elliott, Mullen, et al., 2021). "The change from 'the user learns the interface' to 'the chatbot learns what the user wants' has implications for onboarding, training, productivity and efficiency inside the workplace" (Elliott, Mullen, et al., 2021, "Business Impact" section).

The benefits of using artificial intelligence for customer service (or to provide reference services to library patrons) are great and the technology remains promising, so there is a strong incentive for USC Libraries to engage with vendors now so they will be primed to implement the technology as soon as it matures and hits the mainstream (Sicular & Vashisth, 2020).

Project Goals

Goal 1: Identify and incorporate the use of chatbot technology to enhance the learning experience with increased access to knowledge

Goal 2: Develop and implement chatbot technology that will expand the impact and influence of USC Libraries

Goal 3: Demonstrate commitment to information literacy, with increased support with expanded reference hours implemented by chatbot technologies

Goal 4: Provide professional development opportunities for USC Libraries faculty and staff through training and continuous learning, with a focus on library technology

Scope Description

The primary purpose of the USC Libraries is to support the discovery and dissemination of information to develop informed citizens. The technology plan will delineate the implementation of Chatbot at USC Libraries, stakeholders affected, and milestones that ensure its success. The plan will focus on the first year of the project and will address five major objectives to be achieved during that time frame; in addition to a five-year budget for staffing and supplies. This includes efforts to prepare and conduct focus groups with several campus community populations (stakeholders, students, staff/faculty, and non-affiliated patrons) by the Library Assistant, Business Analyst, and Lead Librarian. Focus groups will assist in determining how the USC community will utilize the new library services, potential challenges, competitors, and potential impact of a chatbot on the campus community. Identifying the needs of the community, building, and implementation of chatbot will occur over the course of a year - with its completion slated for use by current and potential users of USC Libraries to begin during the

Spring Semester. A one-time cost including the purchase of the software, new technology, and training for library staff and librarians. Over the course of five years, the library will continuously assess and maintain the chatbot - ensuring the software and knowledge base are up-to-date to provide relevant and accurate information.

The technology plan excludes updates to the software, which are programmed, coded, and automatically updated via vendor service. Also excluded from this technology plan are licensing, liabilities, and hosting service fees. Other exclusions, that will be provided directly to library staff and faculty, are specific training documentation, best practices, usability metrics and strategies, as well as maintenance documentation to ensure its maintenance, stability, and proper protocols once the chatbot has been implemented.

Benefits to Community

Chatbots provide several benefits to the community and are an incredible contribution to IDEA principles at USC. Chatbots meet each of the principles of IDEA. They provide 24/7 access to resources no matter where the user is, are free of judgment in their responses, available in text and speech to include more users, and are shown to help first-generation students (Barrett, et al., 2019). Chatbots also help students that are too afraid to seek out assistance. Those students are more likely to be on the cusp of not returning to school if they cannot ask for the help they need. Several universities have implemented chatbots to increase their retention rates (Nietzel, M., 2020). Nietzel notes that "Missouri Western State University reported an initial 7% increase in retention after introducing its chatbot. That 7% is equivalent to 45 additional retained students..." Another university used its chatbot to identify "students who had acknowledged they were afraid of failing classes and connecting them to tutors … [and] students who were

contemplating dropping out of school and arranging for student services staff to follow up with them" (Nietzel, M., 2020). Chatbots have the potential to help student outliers stay in school. That is a huge contribution to our community.

Risks

With every project there comes a level of risk. Fortunately, this project only has a few projected risks. The largest potential risk to implementing the chatbot is the lack of use. One cannot see into the future but with the number of surveys, focus groups, and information gathering we are strongly encouraged that we have managed this risk. Students, Faculty, and Staff have all shown overwhelming support for this new program. We have made several plans to raise awareness of the chatbot before and during its rollout and feel confident that we have managed this risk. Should that not be the case we can add more focus groups to help tailor the design once it is up and running.

A second risk is that the staff might not feel that their jobs are secure with the implementation of the chatbot. We have assured our staff that this project will not replace any jobs, but they may not feel comfortable expressing that to their superiors. To combat this, staff will be informed that this will be an added benefit to their jobs by alleviating some of their responsibilities. To show the appreciation that USC Libraries has for its employees, an employee appreciation day will precede the chatbot rollout to celebrate their accomplishments and contributions to this project; in an effort to remedy any negative feelings about the new program.

Extensive additional revisions after the implementation of the Chatbot may pose an additional risk. Though extensive research and feedback have been received from Students, Staff, and Faculty, there is a possibility of change from ideation to execution. Should the vision

interpreted not match what the stakeholders had in mind, there may need to be revisions. In the event that the Chatbot needs revisions, USC Libraries would seek additional financing.

Budget

Chatbot software that performs the functions USC Libraries needs would cost approximately $100,000 (Elliot, Baker et al., 2021). Calculating for research, staffing, and supplies, the total initial cost—including the software—is $187,232.60. The additional five-year estimate for staffing and supplies is $117,274.89, for a total budget of $304,507.49. (See Appendix A.)

Staffing Plan

We have five employees working on the project: Lead Librarian, Assistant Librarian, IT Lead, Business Analyst, and a Programmer. The Lead Librarian and Assistant Librarian will work in tandem with the Assistant Librarian running point on most of the tasks. The Lead Librarian will be the face of the project and communicate the updates to the university. There will be several meetings with the full team to make sure that everyone is on the same page. For further details please refer to Appendix B.

Milestones

In implementing Chatbot at USC Libraries, twenty-one milestones have been identified to ensure the organization and the list of stakeholders have ample opportunities to participate in the project and provide feedback. The milestones will serve as a guide to track and assess the progress of the project to its completion. For a list of milestones please refer to Appendix C.

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Appendix A: Budget

The USC Libraries Chatbot budget may be found in the Google Folder and accessed with a USC assigned email address.

Appendix B: Staffing

The USC Libraries Chatbot budget may be found in the Google Folder and accessed with

a USC assigned email address.

Appendix C: Milestones

Deliverable	Completion Date
Develop survey questions for USC stakeholders, Students/Faculty, and large Focus Group	11/9/2021
Submit Survey questions for approval - USC stakeholders, Students/Faculty, and large Focus Group	11/26/2021
Recruit for focus groups	11/15/2021
Conduct survey for USC Stakeholders and focus groups	11/16/2021
Develop questions for non-affiliated patron interviews	11/24/2021
Submit questions for approval- non-affiliated patrons interviews	11/26/2021
Analyze data for USC Stakeholders	11/29/2021
Identify non-affiliated patrons for interviews	12/8/2021
Conduct interviews with non-affiliated patrons	12/13/2021

Discuss results of USC stakeholders, Students/Faculty, and large Focus Group with team	12/14/2021
Analyze data for focus groups	12/15/2021
Analyze non-affiliated patron interview data	12/22/2021
Discuss results of non-affiliated patron interviews	1/7/2022
Build Chatbot	1/27/2022
Create promotional material	1/27/2022
Print promotional material	1/31/2022
Integrate Chatbot	2/1/2022
Train employees on Chatbot	2/2/2022
Student Chatbot awareness event	2/4/2022
Trial run Chatbot	2/9/2022
Launch Chatbot	2/14/2022